

Message Text

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ACTION EB-07

INFO OCT-01 ISO-00 DODE-00 NSAE-00 TRSE-00 ERDA-05 CIAE-00

COME-00 MC-02 EUR-12 EA-06 ACDA-05 /038 W

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R 051329Z JUN 75

FM USMISSION OECD PARIS

TO SECSTATE WASH DC 7383

C O N F I D E N T I A L SECTION 01 OF 02 OECD PARIS 14414

EXCON

E.O. 11652: XGDS1

TAGS: ESTC, COCOM

SUBJECT: COCOM LIST REVIEW: 1500.NI 2 - FREQUENCY
SYNTHESIZERS

REFS: A. COCOM DOC REV (74) 1500.NI.1/4

B. COCOM DOC REV (74) 1500.NI.1/5

C. COCOM DOC REV (74) 1500.NI.1/6

1. REFS A AND B ARE RESPECTIVELY RECORD OF ROUND II DISCUSSION AND REVISED UK PROPOSAL BASED ON THAT DISCUSSION. WE TRUST THEY HAVE BEEN RECEIVED AND CIRCULATED TO INTERESTED WASHINGTON EXPERTS. REF C, BEING POUCHED, IS AN AMENDMENT BY UK OF ITS REVISED PROPOSAL TO DELETE SUBITEM (B)(II) (THE INCREMENTAL FREQUENCY RESOLUTION PARAMETER), WITH CONSEQUENT RENUMBERING OF BALANCE OF THAT SUBITEM.

2. UKDEL GOODENOUGH DELIVERED ADVANCE COPY OF REF C PERSONALLY IN ORDER TO EXPLAIN THAT THE STEP RESULTED FROM "INTELLECTUAL CONVICTION" AFTER FURTHER STUDY THAT GAMET'S ARGUMENTS ABOUT DIFFICULTY OF APPLYING RESOLUTION PARAMETER TO LABORATORY TYPE SYNTHESIZERS, GIVEN AVAILABILITY OF UNEMBARGOED DIGIT INSERTION UNITS WHICH COULD UPGRADE CAPABILITIES OF SYNTHESIZERS BELOW PROPOSED EMBARGO RESOLUTION LIMITS. GOODENOUGH SAID
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MCCOLOUGH, AFTER GOING MORE DEEPLY INTO FRENCH

PRESENTATION HAD BEEN CONVINCED ON THIS POINT, BUT UK FELT THAT EFFECTIVE CONTROL OF IMPORTANT SYNTHESIZERS COULD STILL BE ACCOMPLISHED WITH THE OTHER, REMAINING PARAMETERS. THEY REALIZED, HOWEVER, THAT US EXPERTS MEYERS AND BOIDOCK HAD APPARENTLY FELT STRONGLY ABOUT THE RESOLUTION PARAMETER, HOPED THEY COULD RECONSIDER THE MATTER, AND SUPPORT AMENDED, REVISED UK COUNTER-PROPOSAL.

3. THAT BEING SAID, UKDEL CONTINUED THAT THERE WAS A REAL DANGER THAT - IF THE RESOLUTION PARAMETER REMAINED - THE FRENCH MIGHT OBJECT TO THE UK PROPOSAL, THE UNSATISFACTORY STATUS QUO WOULD CONTINUE, AND THE FRENCH WOULD APPARENTLY FEEL FREE TO CONTINUE TO EXPORT THE PHASE-LOCKED LOOP SYNTHESIZERS THEY DID NOT CONSIDER AS CAUGHT BY THE PRESENT DEFINITION. WHILE IT WAS TOO EARLY TO DEAL WITH THAT ISSUE NOW, GOODENOUGH COULD NOT RULE OUT THE POSSIBILITY THAT UK WOULD TAKE AN "IF YOU CAN'T BEAT THEM, JOIN THEM" TACK IF PRESENT DEFINITION REMAINED IN FORCE.

4. QUOTED BELOW IS TEXT OF ANNEX TO REF C. DETAILING UK ARGUMENTS ON WHICH THEIR VIEW IS BASED. IN SUB-PARA B, THE DIU PRINCIPLE FORMULA HAS BEEN REPHRASED VERBALLY BY USDEL AND IS SET OFF BY PARENTHESES. THE DIAGRAM IS BEING AIRMAILED TO OEA-BOIDOCK.

BEGIN TEXT:

FREQUENCY RESOLUTION:

A. IN THE 2ND ROUND OF DISCUSSIONS ON THE NEW ITEM 1500 NI 1, THE FRENCH DELEGATION STATED THAT THEY SAW NO NEED TO SPECIFY A LIMIT FOR FREQUENCY RESOLUTION FOR LABORATORY-TYPE FREQUENCY SYNTHESIZERS, COMMENTING THAT THE EMBARGO LIMIT COULD ALWAYS BE EXCEEDED BY THE USE OF UNEMBARGOED SPARE PARTS AND MODULES. THE UK AUTHORITIES HAVE CAREFULLY STUDIED THE POINT, AND HAVE NOW DECIDED THAT IT HAS SOME VALIDITY.

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B. MANY LABORATORY-TYPE SYNTHESIZERS ARE BASED ON THE USE OF DIGIT INSERTION UNITS (DIU'S), WHICH ARE MODULES OR PRINTED CIRCUIT BOARD UNITS ALL DESIGNED TO PERFORM THE SAME OPERATIONS ON THE FREQUENCY SIGNAL BEING SYNTHESIZED AND TO WORK AT APPROXIMATELY THE SAME INPUT AND OUTPUT FREQUENCY. THE BASIC PRINCIPLE USED IN THESE DIU'S IS GIVEN BY:

OUTPUT FREQUENCY EQUALS CARRIER FREQUENCY

PLUS ONE TENTH THE INPUT SIGNAL FREQUENCY

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PLUS TEN TIMES THE DIGIT BEING INSERTED.

THIS PROCESS IS ILLUSTRATED IN THE ATTACHED DIAGRAM,
WHICH SHOWS THE SYNTHESIS OF A FREQUENCY OF 24.39 KHZ
IN A GENERAL RADIO 1161 SYNTHESIZER.

C. IF WE ASSUME AN EMBARGO LIMIT ON FREQUENCY
RESOLUTION OF 1 PART IN 10 TO THE SEVENTH (IE SEVEN
DECIMAL DIGITS), THEN TO BEAT THAT LIMIT WHEN ONE HAS
A SYNTHESIZER WITH SEVEN DIGIT RESOLUTION (IE JUST ON
THE LIMIT AND THEREFORE UNEMBARGOED), ONE MERELY BUYS
ONE OR MORE SPARE UNEMBARGOED DIUS AND ADDS THESE TO
THE SYNTHESIZER, GIVING EIGHT OR MORE DIGITS OF
FREQUENCY RESOLUTION AND HENCE A SYNTHESIZER THAT
APPEARS TO BE EMBARGOED. SUCH DIUS CAN BE BOUGHT AS
SPARES, EITHER FOR MAINTENANCE PURPOSES OR TO ENHANCE
SYNTHESIZERS INITIALLY PURCHASED WITH ONLY A FEW DIUS
AND THUS A POOR RESOLUTION. IN THIS MANNER IT APPEARS
POSSIBLE TO BEAT ANY ARBITRARY LIMIT ON FREQUENCY
RESOLUTION AS LONG AS THAT LIMIT IS WORSE THAN THE
FUNDAMENTAL LIMITATIONS SET BY THE STABILITY AND
ACCURACY OF THE INPUT FREQUENCY STANDARD TO THE
SYNTHESIZER. THIS HAS BEEN CONFIRMED BY EXAMINATION

OF A NUMBER OF SYNTHESIZERS OF WESTERN MANUFACTURE.

D. THE UK AUTHORITIES BELIEVE THAT THE MAJOR EMBARGO
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CRITERIA FOR LABORATORY-TYPE SYNTHESIZERS ARE:- THE
LEVELS OF SPURIOUS COMPONENTS IN THE OUTPUT, THE SPEED
OF PROGRAMMING (IE SELECTION OF A NEW OUTPUT FREQUENCY)
AND THE MAXIMUM OUTPUT FREQUENCY OBTAINABLE. GIVEN
ADEQUATE CONTROLS ON THESE PARAMETERS, THE UK
AUTHORITIES NOW CONSIDER THAT IT IS NOT ESSENTIAL TO
KEEP A LIMIT ON FREQUENCY RESOLUTION.

END TEXT
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